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Transmittal

To: Chip Humphrey Eric Blischke US Environmental Protection Agency, 805 SW Broadway, Suite 500 Portland, OR 97205	From: Gene Revelas Integral Consulting, Inc. 7900 SE 28 th Street, Suite 300 Mercer Island, WA 98040
	Date: November 14, 2007
Re: Portland Harbor RI/FS	Copies to: Distribution

We are sending the following items:

Number of Copies	Description
22	<p>*Please replace our previous submittal dated November 6, 2007 regarding LWG's response to comments. The previous submittal did not address the Erosion Core FSP Approach.</p> <p>Contents: Portland Harbor RI/FS Response to EPA comments on:</p> <ul style="list-style-type: none">- Erosion Core Sediment Evaluation and Field Sampling Plan Technical Approach- Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach

These are transmitted:

☐ For your information ☐ For action specified below ☒ For review and comment ☐ For your use ☐ As requested



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Erosion Core Sediment Evaluation and Field Sampling Plan Technical Approach - Initial Responses to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
G.1	The Erosion Core FSP describes the technical approach for the Round 3B Erosion Core Sediment Sampling. Sampling locations were selected based on the potential for erosion and to characterize subsurface sediments in areas that have not been previously sampled or where the potential for elevated subsurface sediment contamination exists. In general, EPA supports the proposed evaluation approach and is considering the location of erosion cores relative to sediment cores required for the nature and extent characterization.	Final sampling locations were agreed upon during EPA/LWG meetings in September and October 2007.
S.1	<u>Section 2.0 – Erosion Core Sampling Approach</u> : EPA agrees that some or all of the predicted erosion areas may receive deposition during the waning stages of an extreme high-flow event. However, it should be noted that the maximum erosion depth represents the horizon that may be released during these high-flow events.	Agreed.

Erosion Core Sediment Evaluation and Field Sampling Plan Technical Approach - Initial Responses to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.2	Regarding the location of Round 3B sediment cores within (or adjacent) to iAOPCs, it should be noted that EPA and the LWG are still in the process of finalizing sediment sampling locations with the goal of developing a comprehensive sediment core sampling program that addresses both the nature and extent of contamination associated with iAOPCs and the rationale for erosion cores presented in the Erosion Core FSP. In some cases, erosion cores are located within or adjacent to EPA identified iAOPCs (e.g., 3C, 7B and 8C) and may be used for both nature and extent purposes as well as for the objectives specified in the Erosion Core FSP.	Final sampling locations were agreed upon during EPA/LWG meetings in September and October 2007.

Erosion Core Sediment Evaluation and Field Sampling Plan Technical Approach - Initial Responses to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.3	<p><u>Section 3.1 – Erosion Cores Identified by Chemical Distribution</u>: EPA has identified a number of sampling locations that should be adjusted to better capture the potential for subsurface contamination or to enhance spatial coverage. These cores are summarized below:</p> <ul style="list-style-type: none"> • <u>EC4</u> – It is unclear why erosion core EC4 is required. The U.S. Army Corps of Engineers has proposed sampling in this area as part of its source control evaluation. In addition, this core is not presented on figures recently developed by the LWG depicting Round 3B sampling locations. • <u>EC5</u> – Erosion Core EC5 may be combined with the proposed sediment grab station located downstream of EPA identified iAOPC 6JA. • <u>EC6</u> – EPA recommends that erosion core EC6 be moved slightly downstream better capture potential contamination from the near-shore environment that may have been transported downstream. 	<p>Final sampling locations were agreed upon during EPA/LWG meetings in September and October 2007.</p> <p>This location has been removed as agreed upon with EPA</p> <p>These samples have been combined.</p> <p>This sample has been moved slightly downstream and closer to shore.</p>

Erosion Core Sediment Evaluation and Field Sampling Plan Technical Approach - Initial Responses to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.4	<ul style="list-style-type: none"> • <u>EC7 and EC8</u> – Erosion cores EC7 and EC8 are not presented on figures recently developed by the LWG depicting Round 3B sampling locations. • <u>EC10</u> – EPA agrees with the approach outlined for erosion core EC10. However, EPA recommends moving EC10 approximately 100-200' downstream away from the existing core to get better spatial coverage. • <u>EC12</u> – EPA agrees that an erosion core should be advanced to bound PCB contamination at iAOPC 24 and due to the low density of cores (Section 3.3 criterion) in this reach of the river. However, EPA recommends moving the location closer (300-500') to iAOPC 24. 	<p>E7 was removed because an existing core is located in the deep erosion cell within 100 ft of the proposed location for E7. E8 has been replaced and is included in the FSP.</p> <p>The sample has been moved 150 ft downstream.</p> <p>The core has been moved upstream 300 ft, near the location of LW2-G485.</p>

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COMMENT NO.	EPA COMMENTS	LWG Response
S.5	<p><u>Section 3.2 – Erosion Cores Identified in Low Density Nearshore Areas</u>: EPA recommends the adjustment of two erosion cores to aid in the nature and extent of contamination determination at EPA identified iAOPCs. Cores that should be adjusted include:</p> <ul style="list-style-type: none"> • <u>EC16</u> – As agreed to during our September 28, 2007 meeting, erosion core EC16 should be moved upstream adjacent to EPA identified iAOPC 3C. • <u>EC17</u> – EPA recommends moving erosion core upstream to EPA identified iAOPC 5D. 	<p>See below.</p> <p>EC16 has been moved upstream as requested.</p> <p>A core is located at 5D. No change has been made to the location of EC17.</p>

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COMMENT NO.	EPA COMMENTS	LWG Response
S.6	<p><u>Section 3.3 – Erosion Cores Identified in Low Density Areas Identified with Theissen Polygons:</u> The Erosion Core FSP identified a number of erosion cores in low density areas within the main river channel. EPA recommends the following modifications to the following core locations:</p> <ul style="list-style-type: none"> • <u>EC26</u> – EPA agrees that an erosion core should be advanced in this area because of the low density of cores (Section 3.3 criterion) and to bound contamination at iAOPC 18. However we recommend moving the Erosion Core further downstream (150-250' towards the downstream/channel-ward corner of iAOPC 18 off the Hampton Lumber dock). • In addition to the adjustments identified above, EPA recommends one additional erosion core to be located in the high erosion area (bed change -0.9 to -0.6 m) within the main navigation off shore of Terminal 4, Slip 3 (RM 4.5). 	<p>See below</p> <p>This core was move as requested.</p> <p>This core was added as requested.</p>

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COMMENT NO.	EPA COMMENTS	LWG Response
S.8	<u>Section 4.0 – Sampling and Analysis:</u> The Erosion Core FSP states that TBT and dioxins and furans will be targeted at selected stations on a case-by case basis. The evaluation should be expanded to include PCB congeners.	The list of proposed analytes for sampling stations is included in the FSP.

Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach- Response to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
G.1	Overall, EPA supports the approach developed by the LWG to characterize sediments within the upper portion of Multnomah Channel and the upriver reach of the Willamette River. In particular, EPA agrees that further characterization of sediments within the upriver reach will help in the determination of background sediment concentrations for the Portland Harbor RI/FS.	LWG acknowledges the comment.

Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach- Response to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.1	<p>Section 1.0 – Upriver Sampling Approach: While EPA concurs with the 1994 EPA reference document as cited in this section, recent EPA guidance (ProUCL 4.0 User Guide, USEPA, April 2007) states that “background evaluation studies, BTVs (background threshold values), and not-to-exceed values should be estimated based upon defensible background data sets.” In addition, the guidance states that “if enough site and background data are available, two-sample hypotheses testing approaches are used to compare site concentrations with background concentrations levels. These statistical methods can also be used to compare contaminant concentrations of two site AOCs (areas of concern).” EPA believes that the upstream data set will be sufficient to perform hypothesis testing using ProUCL or other similar statistical packages and recommends this approach.</p>	<p>LWG appreciates the comment and will consider it in the analysis of upriver sediment concentrations. Further discussions of statistical methods should be conducted once the data are in.</p>

Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach- Response to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.2	<p>Section 1.4 – Upriver Sample Locations: This section states that the mean grain size for the Study Area is 53% fines and that this percentage will be the target minimum percent fines for samples collected in the upriver evaluation. EPA disagrees with this restriction. It is more appropriate to target a grain size distribution that mimics the grain size distribution within the Portland Harbor Study Area. This will ensure a representative upriver data set.</p>	<p>The FSP includes an analysis of the grain-size distribution for the Study Area and for the existing samples in the Upriver reach. These distributions are significantly different, with the Upriver area characterized by fewer percent fines as expected. The number of upriver samples needed to match the Study Area distribution quartiles have been identified, and samples will be selected to match this distribution to the extent possible.</p>
S.3	<p>The LWG identified 12 depositional areas for the collection of sediment samples. The LWG proposed performing grain size analysis and based on the results of the grain size analysis submitting up to three samples from each area for chemical analysis with a total of 20 samples. EPA recommends collecting 2 – 3 samples from each area for chemical analysis for a total of 24 – 36 samples. Samples should be selected following grain size analysis and consultation with EPA to ensure a representative distribution of grain sizes and an adequate spatial distribution of sediment chemistry analyses.</p>	<p>LWG will attempt to collect 2-3 samples from each of the areas identified. In order to obtain a representative distribution for the PH area, however, it is likely that not all samples will be selected for analysis. The objective is to submit between 24 and 36 samples for analysis.</p>

Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach- Response to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.4	As EPA stated in our June 8, 2007 Round 3B Data Gaps letter, EPA is collecting sediment data between RM 22 and 29 in conjunction with site assessments being performed at the Blue Heron and West Linn paper mills. This data should be used as part of the upriver evaluation.	Consistent with the approach LWG developed for the Upriver reach, samples collected near sources associated with these sites should be considered for exclusion from the background data set. Based on the Work Plan reviewed by LWG, some of these sampling locations appear to be near contaminant sources associated with these two sites.
S.5	The evaluation presented in Figure 4 demonstrates that the plot of UCL/mean vs. Sample Size becomes asymptotic once the total sample size reaches 40 to 50 samples. Considering the samples collected by the LWG during Round 2 (18 sediment samples), the 24 – 36 additional samples proposed by EPA, the sediment data recently collected by EPA during the Blue Heron and West Linn paper mills site investigation and allowing for outliers, a total upriver sample size in the range of 50 – 60 samples should be adequate for a complete and thorough analysis of upriver sediment concentrations.	LWG appreciates the comment and will consider it in the analysis of upriver sediment concentrations.

Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach- Response to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.6	Existing data collected in the upriver reach have PCB detection limits of up to 20 ug/kg. Sediment samples collected the LWG as part of Round 2 ranged from 2 to 5 ug/kg. It is critical that the upriver evaluation not be biased by the inclusion of samples with unacceptable detection limits. A minimum detection limit for including data in the data set should be established. EPA recommends that the minimum detection limit be established between 2 and 5 ug/kg. In addition, statistical tests that consider the distribution of the data set should be applied to identify outliers in the data set. Because of the potential for contamination associated with specific sources, statistical outliers should not be included in the data set.	LWG appreciates the comment and will consider it in the analysis of upriver sediment concentrations.

Upriver and Multnomah Channel Sediment Evaluation and Field Sampling Plan Technical Approach- Response to EPA Comments

COMMENT NO.	EPA COMMENTS	LWG Response
S.7	<p>Specific Comments – Multnomah Channel: In general, the proposed sampling locations are acceptable. However, EPA would like to collect sediment cores in a manner similar to the sediment cores that were collected downstream of RM 2 in the mainstem Willamette River. Five of the ten proposed locations should be converted from surface grabs to 14' sediment cores. EPA requests that the following five surface grab locations be converted to sediment cores: MC-02, MC-03, MC-05, MC-09 and MC-10.</p>	<p>The Sediment FSP incorporates this modification.</p>